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WE CLAIM:

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1. A measuring device for non-invasively measuring levels of constituents in blood and tissue in a living subject such as a human or animal, said measuring device comprising:

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- (a) a polychromatic light source that emits a broad spectrum of light in the near infrared range and adjacent visible light;
- (b) a part receptor shaped for receiving a part of said subject, said part receptor being located relative to said light source so that when part of said subject is placed in the part receptor, said light source can be activated and light from said light source can be directed onto said part;
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- (c) a light receptor for collecting a continuum of wavelengths over said broad spectrum after said light has been directed onto said part;
- (d) dispersion means coupled to said light receptor for dispersing said collected light into a dispersed spectrum of component wavelengths of said collected light;
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- (e) a photodetector coupled to said dispersion means for taking absorbance measurements from said dispersed spectrum and producing a measurement signal;
- (f) a communications interface connectable to an external computer for communicating said measurement signal to said computer; and
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- (g) a power interface connectable to an external stabilized power source.

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2. The device in claim 1, wherein, said polychromatic light source is connected to the external stabilized power source through said power interface.

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3. The device in claim 1, wherein said device is provided in combination with such said external computer, and wherein said external computer controls at least one function of said compact

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measuring device, said computer including means for receiving said measurement signal.

5 4. The device in claim 3, further comprising an analog to digital converter for converting said measurement signal into a digital measurement signal for communication to said computer.

10 5. The device in claim 3, wherein, said external computer includes a memory, a storage, and software means for storing a plurality of said measurement signals for a plurality of measurements.

15 6. The device in claim 3, wherein, said external computer includes a memory, a storage, and software means for storing, retrieving and displaying dosage information corresponding to measurement signals received by said computer from said device.

 7. The device in claim 3, wherein, said external stabilized power source is provided by said external computer.

20 8. The device in claim 1, wherein, said part receptor is shaped to receive said part in close alignment, so as to reduce extraneous light.

25 9. The device in claim 8, wherein, said part received within said part receptor is a human finger, and the device has a housing with an opening adapted to receive a human hand.

30 10. The device in claim 9, further comprising a hand support at the housing opening, said hand support being adjustable to vary the size of the opening.

 11. The device in claim 10, wherein, said hand support receives the palm of a human hand and the top of said opening is curved to generally fit the profile of a human hand across the top of the hand.

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